

Appl. No.
Amdt. dated
Reply to Office Action of

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (Currently Amended) An apparatus for pumping and sterilizing or
2 disinfecting liquid held in a reservoir, comprising:
3 a fluid conduit, which is at least partially submerged in the liquid held in the
4 reservoir;
5 a ultraviolet ~~light source~~ lamp which is at least partially within the fluid conduit,
6 the ultraviolet ~~light source~~ lamp comprising:
7 a casing for holding a gas and a vaporizable material, the casing
8 comprising a body portion and at least one end portion;
9 at least one electrode positioned within the casing and electrically coupled
10 to a power source, the at least one electrode operable to excite the gas and the vaporizable
11 material;
12 a protective coating surrounding and in touching proximity with at least a
13 ~~portion of the ultraviolet light source, the protective coating hermetically sealing the~~
14 ~~ultraviolet light source~~ the body portion of the casing, the protective coating having
15 properties that allow the germicidal energy to pass; and
16 an air drive unit coupled to the fluid conduit and adapted to cause a liquid to flow
17 through the fluid conduit and past the portion of the ultraviolet ~~light source~~ lamp in the fluid
18 conduit, wherein ~~the said ultraviolet light source~~ the lamp generates an ultraviolet light which kills
19 microorganisms in the liquid and said fluid conduit.

1 2. (Cancelled)

1 3. (Currently Amended) The apparatus as recited in claim 2 1, wherein the
2 said protective coating surrounds and is in touching proximity to the body portion and at least a
3 portion of the at least one end portion comprises a UV transmissive material.

Appl. No. 09/619,520
Amdt. dated February 24, 2005
Reply to Office Action of August 25, 2004,

PATENT

1 4. (Currently Amended) The apparatus as recited in claim 3 1, wherein the
2 said protective coating is a fluoropolymer coating.

1 5. (Currently Amended) The apparatus as recited in claim 2 1, wherein said
2 casing ~~comprises~~ the body portion is formed of a fluoropolymer casing material.

1 6. (Currently Amended) The apparatus as recited in claim ~~4~~ 1, wherein the
2 body portion said casing comprises a quartz or glass material ~~casing and said fluoropolymer~~
3 ~~coating surrounds said quartz or glass casing.~~

1 7. (Currently Amended) The apparatus as recited in claim 3 1, wherein the
2 said protective coating comprises a silicon polymer or silicone material.

1 8. (Previously Presented) The apparatus as recited in claim 4, wherein said
2 fluoropolymer coating is made from a fluoropolymer selected from the group of fluoropolymers
3 including, PTFE, FEP, PFA, AF, and Tefzel ETFE.

1 9-12. (Cancelled)

1 13. (Currently Amended) The apparatus as recited in claim 6 1, wherein the
2 ~~said fluoropolymer protective coating is heat shrunk around~~ applied to the at least the body
3 portion of the casing by a process selected from a group of processes including heat shrinking the
4 protective coating onto the at least the body portion of the casing, form pressing the protective
5 coating onto the at least the body portion of the casing, spraying the protective coating onto the
6 at least the body portion of the casing, and dipping the at least the body portion of the casing into
7 a fluoropolymer liquid material ~~said quartz or glass casing of said ultraviolet light source.~~

1 14. (Cancelled)

1 15. (Cancelled)

Appl. No. 09/619,520
 Amdt. dated February 24, 2005
 Reply to Office Action of August 25, 2004,

PATENT

1 16. (Currently Amended) The apparatus as recited in claim 1, ~~further~~
 2 ~~comprising a power source~~, wherein the said power source is a solar power source connected to
 3 the said ultraviolet light source lamp, and wherein the said protective coating surrounds the said
 4 solar power source and the said ultraviolet light source lamp and ~~hermetically seals~~ the said solar
 5 power source with the said ultraviolet light source lamp.

1 17. (Currently Amended) The apparatus as recited in claim 1, ~~wherein said~~
 2 ~~ultraviolet light source comprises a first end portion, a second end portion, and an elongated~~
 3 ~~body portion formed between said first end portion and said second end portion, and wherein the~~
 4 ~~said protective coating sleeve comprises a fluoropolymer coating covering at least a portion of~~
 5 ~~said elongated the body portion and at least one first and second end caps covering said first and~~
 6 ~~said second the at least one end portions, respectively, and forming a seal with the fluoropolymer~~
 7 ~~coating.~~

1 18. (Currently Amended) The apparatus as recited in claim 17, wherein the at
 2 least one said first and said second end caps comprises a fluoropolymer end caps.

1 19. (Currently Amended) The apparatus as recited in claim 17, wherein the at
 2 least one said first and said second end caps comprises a silicone end caps.

1 20. (Currently Amended) The apparatus as recited in claim 17, the at least
 2 one said first and said second end caps are is sealed to the said protective coating using a silicone
 3 sealer.

1 21. (Cancelled)

1 22. (Currently Amended) A method of pumping and sterilizing or disinfecting
 2 a liquid held in a reservoir, comprising the steps of:
 3 positioning a fluid conduit at least partially submerged in the liquid held in the
 4 reservoir;

Appl. No. 09/619,520
Amdt. dated February 24, 2005
Reply to Office Action of August 25, 2004,

PATENT

5 placing an ultraviolet light source lamp at least partially within the fluid conduit,
6 the ultraviolet light source lamp comprising:
7 a casing for holding a gas and a vaporizable material, the casing
8 comprising a body portion and at least one end portion:
9 at least one electrode positioned within the casing and electrically coupled
10 to a power source, the at least one electrode operable to excite the gas and the vaporizable
11 material; and
12 a protective coating surrounding and in touching proximity with at least a
13 portion of the ultraviolet light source, the protective coating hermetically sealing the
14 ultraviolet light source the body portion of the casing, the protective coating having
15 properties that allow the germicidal energy to pass;
16 pumping air into the fluid conduit to pump liquid through the fluid conduit and
17 past at least a portion of the ultraviolet light source lamp; and
18 illuminating the said ultraviolet light source lamp so that an ultraviolet light is
19 generated, killing microorganisms in the liquid and the said fluid conduit.

1 23. (Cancelled)

1 24. (Currently Amended) The method as recited in claim 23 22, wherein the
2 said protective coating is a fluoropolymer sleeve coating.

1 25. (Currently Amended) The method as recited in claim 23 22, wherein said
2 casing comprises the body portion is formed of a fluoropolymer casing material.

1 26. (Currently Amended) The method as recited in claim 24 22, the body
2 portion said casing comprises a quartz or glass material casing and said fluoropolymer coating
3 surrounds said quartz or glass casing.

1 27. (Previously Presented) The method as recited in claim 24, wherein said
2 fluoropolymer coating is made from a fluoropolymer selected from the group of fluoropolymer
3 including, PTFE, FEP, PFA, AF, and Tefzel ETFE.

Appl. No. 09/619,520
Amdt. dated February 24, 2005
Reply to Office Action of August 25, 2004,

PATENT

28. (Currently Amended) The method as recited in claim 23 22, wherein the
said protective coating comprises a silicon polymer or silicone material.

29.-32. (Cancelled)

33. (Currently Amended) The method as recited in claim 26 22, wherein the
~~fluoropolymer protective coating is heat shrunk around~~ applied to the at least the body portion of
the casing by a process selected from a group of processes including heat shrinking the
protective coating onto the at least the body portion of the casing, form pressing the protective
coating onto the at least the body portion of the casing, spraying the protective coating onto the
at least the body portion of the casing, and dipping the at least the body portion of the casing into
a fluoropolymer liquid material ~~said quartz or glass casing of said ultraviolet light source.~~

34. (Cancelled)

35. (Cancelled)

36. (Currently Amended) The method as recited in claim 22, wherein the said
power source is a solar power source connected to the an ultraviolet ~~light source~~ lamp, and
wherein the a protective coating surrounds the said solar power source and the said ultraviolet
~~light source lamp~~ and ~~hermetically seals~~ the said solar power source with the said ultraviolet
~~light source lamp~~.

37. (Currently Amended) The method as recited in claim 22, ~~wherein a~~
~~ultraviolet light source comprises a first end portion, a second end portion, and an elongated~~
~~body portion formed between said first end portion and said second end portion, and wherein the~~
said protective coating sleeve comprises a fluoropolymer coating covering at least a portion of
said ~~elongated~~ the body portion and at least one first and second end caps covering said first and
said second ~~the at least one~~ end portions, respectively, and forming a seal with the fluoropolymer
coating.

Appl. No. 09/619,520
Amdt. dated February 24, 2005
Reply to Office Action of August 25, 2004,

PATENT

1 38. (Currently Amended) The method as recited in claim 37, wherein the at
2 least one ~~said first and said second~~ end caps comprises a fluoropolymer end caps.

1 39. (Currently Amended) The method as recited in claim 37, wherein the at
2 least one ~~said first and said second~~ end caps comprises a silicone end caps.

1 40. (Currently Amended) The method as recited in claim 37, the at least one
2 ~~said first and said second~~ end caps are is sealed to the ~~said~~ protective coating using a silicone
3 sealer.

1 41. (Cancelled)

1 42. (Cancelled)

PATENT

Appl. No.

Amdt. dated

Reply to Office Action of May 4, 2005, and in conjunction
with the RCE filed herewith,